# *APPENDIX C TRANSMISSION PROJECT STATUS AND ASSUMPTIONS*

## STATUS OF PG&E, SDG&E, AND SCE TRANSMISSION PROJECTS

Appendix B of the February 11, 2003 Staff Draft Report entitled ***Preliminary Electricity and Natural Gas Infrastructure Assumptions*** includes a comprehensive description of each of PG&E's, SDG&E's, and SCE's transmission projects. The information presented was based on each utility's 2002 transmission expansion plan submitted to the CA ISO, as well as each utility's latest (as of February 3, 2003) monthly status report submitted to the CPUC in response to AB 970 requirements.

An update of these tables is presented here. These tables were created from each utility's latest (as of July 1, 2003) monthly status report, as well as the ***2003 California ISO Controlled Grid Final Study Plan, Version 2.2*** released on July 16, 2003. The ***Study Plan*** presents only the major transmission projects (230 kV and above) which were approved by the CA ISO, whereas the utility monthly filings contain all transmission projects. With respect to the major projects, staff has used its informed judgment to resolve the few discrepancies found among these documents.

Tables C-1 through C-7 show the status of the projects in each of the seven PG&E planning areas (Humboldt Area, North Coast and North Bay Areas, Central Coast and Los Padres Areas, North Valley Area, Central Valley Area, Greater Fresno and Kern Areas, and Greater Bay Areas, respectively.) Table C-8 shows the status of SDG&E projects, while Table C-9 shows the status of SCE projects. The information about each project includes its identification number assigned by the Participating Transmission Owner (PTO), project name, purpose, current projected or actual on-line date, status of CA ISO approval, status of PTO funding approval, whether or not a Certificate of Public Convenience and Necessity (CPCN) is required from the CPUC, project status, and description/comments.

## TRANSMISSION UPGRADES ASSUMED IN SIMULATIONS

There are seven major transmission projects conservatively expected in the next ten years which are modeled in MarketSym$^{TM}$ simulations. Staff has previously reported on the status of these projects in two reports: (1) the February 11, 2003 Staff Draft Report entitled ***Preliminary Electricity and Natural Gas Infrastructure Assumptions***; and (2) the May 2003

Staff Report entitled ***Electricity Infrastructure Assessment***. The following information is current as of July 31, 2003.

1. Path 15 upgrade: The addition of a third 500 kV line between Los Banos and Gates would reduce a major intrastate bottleneck that limits economic transfers between northern and southern California. This joint TransElect/Western Area Power Administration (WAPA)/PG&E project is modeled by increasing the North-to-South capacity by 1,135 MW and the South-to-North capacity by 1,500 MW beginning in January 2005. Staff learned from WAPA at the June 10, 2003 IEPR Electricity Infrastructure Assessment Workshop that approximately two-thirds of the right-of-way has been acquired. A contractor has been selected to construct the upgrade. Construction will begin when all of the right-of-way has been acquired, which is expected by the end of summer 2003. The project is expected to be on line on or before December 2004.

2. Path 26 (Midway to Vincent) upgrade: This project would allow an increase in the path rating from 3,000 MW to 3,400 MW by installing a new remedial action scheme (RAS) to drop new generation in PG&E's Midway area in the event of a contingency. Due to an explosion and fire at SCE's Vincent transformer bank 2AA on March 21, 2003, the current transfer capability of Path 26 is 2,500 MW. Because the installation of a fourth transformer at Vincent had already been planned for July 1, 2003, the fourth transformer will now serve as a functional equivalent for transformer bank 2AA, thereby allowing a return to a path rating of 3,000 MW once it becomes operational. The RAS upgrades are being made independent of the transformer installation, and according to PG&E should be operational by November 2003. Staff had previously assumed an effective date of October 2003; the slip of one month will not impact staff's simulations. On July 17, 2003 the WECC confirmed that the Path 26 accepted rating is 3,400 MW in the north-to-south direction, while the existing accepted rating in the south-to-north direction remains unchanged at 3,000 MW. However, the 3,400 MW north-to-south maximum flow will not be achieved physically until the replacement transformer bank becomes operational, which is currently estimated to occur on August 7, 2003.

3. Path 45 upgrade: The physical upgrades (line reconductoring from the La Rosita Substation in Mexico to the Imperial Valley Substation in California) necessary to increase the entire path rating from about 408 MW to 800 MW were completed in November 2001. On July 17, 2003 the WECC confirmed that the Path 45 accepted rating is now 800 MW in the south-to-north direction, while the existing accepted rating in the north-to-south direction remains unchanged at 408 MW.

4. Miguel-Mission and Imperial Valley Substation upgrades: The combination of these upgrades will allow for an additional 560 MW of capacity to be delivered to the San Diego load center. The CPUC approved the construction of these projects based on their economic (rather than reliability) merits on February 27, 2003; however, SDG&E must still obtain a Certificate of Public Convenience and Necessity (CPCN) for the Miguel-Mission portion of the project. The CPUC will expedite the CPCN since the economic need for the project has been established and the work will be done within SDG&E's

rights-of-way. Staff has assumed an on-line date of January 2005. The most recent SDG&E monthly filing to the CPUC shows an on-line date of June 2005.

5. Path 46 upgrade: Staff has assumed a 1,000 MW increase in the West of Colorado River path from the Imperial Irrigation District area to the SCE area in January 2009. Unlike the other projects discussed here, this is a generic project assumption that does not reflect an actual proposal by a project proponent, but is assumed to be needed to accommodate the movement of RPS-driven renewable energy from new geothermal facilities in the Salton Sea area.

6. Jefferson-Martin project: This reliability-driven project would increase the transfer capability from PG&E north of Path 15 into the San Francisco area from 700 MW to 1,100 MW. Staff has assumed the CPUC will issue its CPCN and construction will be complete by January 2006. According to PG&E, assuming the CPCN is granted by April 2004, land acquisition and project construction would start immediately to achieve an in-service date of September 2005 or earlier.

7. Valley-Rainbow project: Staff has modeled this project as an increase in transfer capability between SCE and SDG&E beginning in January 2009. The CPUC denied SDG&E a CPCN for this project in December 2002 (D.02-12-066). On January 23 2003 SDG&E filed two petitions, an Application for Rehearing of San Diego Gas & Electric Company Decision of 02-12-066 and a Petition to Modify Decision of 02-12-066. On May 12, 2003 the CPUC issued a decision denying rehearing of the Valley Rainbow decision and on June 5 2003, the CPUC issued a decision denying the Petition to Modify the Decision.

## Table C-1
## PG&E Transmission Projects – Humboldt Area

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| T376 | Humboldt 60 kV Protection Upgrade | Resolve transient instability in the Humboldt area | 9/1/2003 | Yes | Yes | No | Construction | Upgrade to High Speed Protection Schemes. |
| T658 | Humboldt-Arcata Jct. Third 60 kV Line | Reliability: Increase 60kV supply at Arcata Substation | 10/1/2004 | Yes (Scope modification) | Pending Cost Estimate | No (NOC) | Planning | Construct 3rd 60kV transmission line between Humboldt and Arcata Substation. |

# Table C-2
# PG&E Transmission Projects – North Coast and North Bay Areas

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| T572 | Fulton – St. Helena Jct. 60 kV Line SCADA | Low voltages, emergency overload | 3/31/2002 | Yes | Yes | No | In service | Install Supervisory Control and Data Acquisition (SCADA) for remote load transfer operation. |
| T118 | St. Helena - Pueblo 115 kV Line Reinforcement Project (Dunbar SCADA) | Emergency line overload and low voltage | 4/1/2002 | Yes | Yes | No | In service | |
| T643 | Tulucay - Napa #1 & #2 60 kV Line Reinforcement | Resolve thermal overload | 9/1/2002 | Yes | Yes | No (NOC effective) | In service | Reconductor a 60 kV line. |
| T245 | Lakeville 230/115 kV Transformer | Reliability: Resolve Emergency low voltage and thermal overloads | 5/1/2004 | Yes (Scope modification) | Yes | No | Planning | Replace Transformers Nos. 1 and 1A with one large (420 MVA) transformer. |
| T254 | Sonoma/ Mendocino Coast Voltage Support | Reliability: Provide voltage support | 5/1/2004 | Yes | Yes | No | Planning | Install distribution capacitors at Big River Substation. 6/1/03: Install capacitor control devices at Fort Bragg, Elk, Point Arena and Philo to control existing station capacitors. |
| T199 | Ignacio 115/60 kV Transformer | Reliability: Increase 60 kV supply | 5/1/2006 | Yes | Not yet | No | Planning | Add a new 115/60 kV transformer. 6/1/03: In-service date changed from "April or May 2006" to 5/06. |
| T571 | Lakeville 230/60 kV Transformer | Reliability: Increase 60 kV supply at Lakeville | 5/1/2006 | Yes | Pending Cost Estimate | No | Planning | Add a new 230/60 kV transformer at Borden. |

## Table C-2 - Continued
## PG&E Transmission Projects – North Coast and North Bay Areas

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| T253 | Sonoma - Napa Electric Transmission Capacity Project | Reliability: Increase capacity of power interchange | 5/1/2006 | Not yet | Pending Cost Estimate | CPCN/PTC TBD | Planning | Construct one or two 115 kV transmission circuits from Lakeville Substation to Sonoma and Pueblo Substations. May involve 230 kV facilities. |
| T654 | Eagle Rock-Mendocino System Upgrade | Reliability: increase transmission capacity | TBD | Not yet | Pending Cost Estimate | TBD | Planning | In early planning stage, may involve construction of 230kV transmission facilities. |
| T777 | Fulton-Santa Rosa 115 kV Lines | Reliability: category B; increase capacity of power interchange between substations. | TBD | Yes | Yes | No (NOC effective) | Construction | Reconductor 115 kV lines between Fulton and Santa Rosa Substations. 4/1/03: the Fulton-Munroe section is scheduled for May 2003. The Monroe-Santa Rosa Section is scheduled for December 2003. 6/1/03: In-service date changed from 5/1/03 and 12/1/03 to TBD, pending consultation with Federal agencies. |

## Table C-3
## PG&E Transmission Projects – Central Coast and Los Padres Areas

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| T698 | Salinas 115/60 kV Transformer Capacity Increase | Reliability: Increase 60 kV supply | 5/1/2004 | Yes | Pending Cost Estimate | No | Planning | Install a third 115/60 kV transformer bank at Salinas Substation. |
| T049 | Moss Landing-Green Valley 115 kV Line Reconductoring | Reliability: category B; increase capacity of power interchange between substations. | 12/1/2004 | Yes | Yes | No (NOC) | Planning | Reconductor both lines. |
| T833 | Diablo Canyon Power Plant Special Protection System | Reliability: Increase grid reliability | 4/1/2005 | Yes | Pending Cost Estimate | No | Planning | SPS to trip generation. Change in schedule to coordinate with re-fueling. 5/1/03: On-line date moved to 4/1/05. |
| T737 | Mesa 230/115 kV Special Protection System | Reliability | TBD | Not yet | Not yet | No | Planning | Install protection equipment to guard against thermal overloads. Further analysis concluded that this SPS is very complicated and extremely difficult to implement. PG&E will work with the ISO on an alternate. |
| T695 | Salinas-Watsonville Plan | Reliability | TBD | Not yet | Not yet | No | Planning | In early planning stage, may involved construction of a new 60 kV transmission substation and line facilities. |

# Table C-4
# PG&E Transmission Projects – North Valley Area

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| T228 | Paradise Area Reinforcement Project | Reliability: Resolve normal & emergency overload, low voltage | 3/1/2002 | Yes | Yes | No (PTC effective) | In service | Reliability: increase capacity of Paradise Substation. |
| T230 | Cottonwood 60 kV Line Reconfiguration | Reliability: category A | 7/31/2002 | Yes | Yes | No | In service | Modify 60 kV switches. |
| N/A | Round Mountain 500/230 kV Transformer Bank Upgrade | Reliability | 12/21/2003 | N/A | Yes | No | Construction | Replace existing 3-280 MVA single phase bank with 4-374 MVA single phase banks. |
| T759 | Atlantic Substation Second 230/60 kV transformer | Reliability: Increase 60 kV supply at Atlantic Substation | 5/1/2005 | Not yet | Pending Cost Estimate | No | Planning | Install second 230/60 kV transformer at Atlantic Substation. 4/9/03: ISO has insufficient information to assess project. Wants PG&E to resubmit no later than the completion of the 2003 Transmission Grid Expansion Plan. |
| T901 | Cottonwood 230/60 kV Transformer | Reliability: Increase 60 kV supply at Cottonwood | 5/1/2006 | Yes | Not yet | No | Planning | Add a new 230/60 kV transformer at Cottonwood. 5/03: On-line date now 5/06. |

# Table C-5
# PG&E Transmission Projects – Central Valley Area

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| T673 / T675 | Cortina-Colusa 60 kV Transmission | Reliability: Normal and emergency overloads, low voltages | 2/1/2002 | Yes | Yes | No (NOC effective) | In service | Reconductor portion of the Cortina-Colusa 60 kV Transmission Line #3. |
| T686 | Palermo-Nicolaus Line Rerate | Reliability: resolve overloads | 5/1/2002 | Yes | Yes | No | In service | 9/2/02: name changed from Palermo-Rio Oso to Palermo-Nicolaus because the utility updated its naming conventions. The original 2007 date was set to allow time to include potential project changes such as reconductoring. Instead, this became a rerate project and was completed in May 2002, per the CA ISO, 5/30/03. |
| N/A | Tracy Second 500/230 kV transformer bank | Resolve normal and emergency overloads | 5/1/2002 | N/A | Yes | No | In service | Install new transformer bank. |
| T691 | Rio Oso-Atlantic and Rio Oso-Gold Hill 230 kV Lines Rerate | Resolve normal and emergency 115 kV line overloads | 9/1/2002 | Yes | No | No | In service | Rerate 230 kV lines. 9/02: on-line date moved up from 5/03 to 9/02. |
| T881 | Path 26 Contingency RAS South-to-North | Reliability: Increase capacity of power interchange between PG&E and SCE | 12/1/2002 | Yes | Yes | No | In service | Install substation equipment at Midway Substation and modify computer software at the San Francisco RAS Controller. |
| T242 | Goldhill 230/115 kV Transformer Bank | Reliability: Resolve thermal overload | 5/1/2003 | Yes | Yes | No | In service | Increase transformer capacity. 5/1/03: Replace transformer banks 2 & 3 with one large (420MVA) transformer. |
| T891 | Vaca Dixon 230kV Circuit Breaker | Reliability: Increase transmission of 115 kV power and reduce RMR contract cost. | 5/1/2003 | Yes | Yes | No | In service | Install 230 kV breaker at Vaca Dixon Substation dedicated to the Vaca Dixon 230/115 kV Transformer No. 4. |

## Table C-5 - Continued
## PG&E Transmission Projects – Central Valley Area

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| T101 | Atlantic-Del Mar New 60kV line | Reliability: Resolve normal overload and low voltage | 5/1/2004 | Yes | Yes | No (PTC effective) | Permitting | Currently in the CPUC permitting process. On-line dated changed from 5/1/03 to 5/1/04. |
| T758 | Brighton Second 230/115 kV Transformer Bank | Reliability: Increase 115 kV supply | 5/1/2004 | Yes | Yes | No | Planning | Install second transformer. |
| T687 | Colgate-Rio Oso Line Rerate | Reliability: Increase capacity of power interchange between substations | 5/1/2004 | Pending Cost Estimate | Yes | Exempt | Planning | Rerate 230kV transmission lines for capacity at 3 feet per second wind speed rather than 2 feet per second |
| T243 | Colgate-Smartville 60 kV Line Reconductoring | Reliability: category B | 5/1/2004 | Yes | Pending Cost Estimate | No (NOC) | Planning | Reconductor Colgate-Smartville Nos. 1 and 2 lines. 01/27/03 PG&E Draft Yuba and Sutter Counties Long-Term Transmission Plan lists expected on-line date as 11/03. |
| T346 | Cortina Substation Transformer Capacity Increase | Reliability: Resolve thermal overload | 5/1/2004 | Yes | Pending Cost Estimate | No | Planning | Install a new 230/115 kV transformer. |
| T678 | Lockeford 230 kV Voltage Support | Reliability: Provide voltage support to area around Lockeford Substation | 5/1/2004 | Yes | Pending Cost Estimate | TBD | Planning | Loop the Brighton-Bellota 230 kV transmission line into Lockeford Substation; other alternatives are being investigated |
| T786 | Lockeford 230/60 kV Capacity Increase | Reliability: resolve overload | 5/1/2004 | Yes | Yes | No | Planning | Replace existing 134 MVA transformer with two 200 MVA transformers. 5/1/03: Install 2nd 230/60 kV transformer. Project scope amended to include the replacement of the existing transformer due to its inadequate capability. |

## Table C-5 - Continued
## PG&E Transmission Projects – Central Valley Area

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| T845 | Tesla 230/115 kV Transformer | Reliability: Increase 115 kV supply | 5/1/2004 | Yes | Yes | No | Planning | Replace 230/115 kV Transformer Bank No. 1 |
| NA | Path 15 Upgrade; new 500 kV line (MOU project) | Increase transfer capability of Path 15 from 3,900 MW to 5,400 MW (south to north) | 12/31/2004 | Yes | N/A | N/A | Letter Agreement accepted by FERC on 6/12/02 | May 2002 - MOU between Trans-Elect, PG&E, and Western has been initiated with the following ownership percentages: Trans-Elect at 72%, PG&E at 18%, and Western at 10%. PG&E would be responsible for substation modifications at Los Banos and Gates. Western would act as project manager. Letter Agreement filed with FERC on April 30, 2002, and accepted by FERC on 6/12/02. Approved by ISO Board on 6/25/02. Participants are working on more detailed agreements necessary to complete the project. No release date has been identified. 12/30/02 MOU (Construction and Coordination Agreement) signed between Western, TransElect, PG&E. 2/3/03: Western issued solicitation for construction work; expects completion by 12/31/04. 5/27/03: Contractor selected |
| T809 | Salado 115 kV and 60 kV System | Reliability Category B | 2004 | No (scope changes) | No | No | Planning | 4/9/03: CA ISO has insufficient information to assess project. Wants PG&E to resubmit no later than the completion of the 2003 Transmission Grid Expansion Plan. |
| T314 | Colgate 230/60 kV Capacity Increase | Reliability: Increase power to 60 kV grid | 5/1/2005 | Yes | Pending Cost Estimate | No | Planning | Installation of second transformer is an infeasible alternative. Other options are being assessed to determine recommended alternative. 5/1/03: Install 2nd 230/60 kV transformer at Colgate Powerhouse |
| T815 | Marysville-Smartville 60 kV Line | Reliability: Increase 60 kV capacity to Marysville Substation | 5/1/2005 | Not yet | No | No (PTC) | Planning | PG&E is not requesting ISO approval at this time. Additional analysis will be performed as part of the 2003 Expansion Plan to determine a preferred plan. 5/1/03: In-service date changed from 5/07 to 5/05. |

## Table C-5 - Continued
## PG&E Transmission Projects – Central Valley Area

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| T783 | Vaca Dixon 230/115 kV Transformer Replacement | Vaca Dixon 230/115 kV Transformer Replacement | 5/1/2005 | Yes | Pending Cost Estimate | No | Planning | Transformer replacement. The addition of a 230 kV circuit breaker has changed the timing of this project |
| T444 | Gold Hill-Placer 115 kV Lines | Reliability: category B; increase 115 kV supply to the Placer area | 5/1/2006 | Yes | Pending Cost Estimate | No (NOC) | Planning | Reconductor the limiting sections of the No. 2 line. 5/15/03: on-line date changed to 5/06. |
| T177 | West Sacramento - Davis | Reliability: Serve increased loads | 5/1/2006 | Yes | Pending Cost Estimate | No (NOC/ PTC TBD) | Planning | Convert 60 kV facilities to 115 kV. 3/5/03: on-line date moved from 5/04 to 5/06. |
| T903 (PG&E) and 04833 (SCE) | Path 26 Upgrade Project, Phase 1 (Short-term solution) - - RAS to Drop SCE Load | Economic: Increase transfer capability and relieve transmission congestion | 11/3/03 (staff estimate) | Yes | Yes (PG&E) | No | Planning | Phase 1. Project added on 5/1/02. Modify the existing remedial action scheme to trip generation in the Midway area for a 500 kV double line outage. This would increase the north-to-south transfer capability of Path 26 from the existing 3000 MW to 3400 MW (short-term solution). See also the Path 26 Upgrade Project Long-term solution. 1/27/03: SCE lists project as under construction, expected on-line 6/1/03; PG&E expects project on-line 11/03. |

## Table C-6
## PG&E Transmission Projects – Greater Fresno and Kern Area

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| T362 | Oakhurst Area Reinforcement: Kerckhoff 1-Kerckhoff 2 Lines and Breakers | Reliability: Emergency overload, low voltages | 3/1/2002 | Yes | Yes | No | In service | Breaker work completed in 3/02. See T756 for Phase 2 reconductoring work. |
| T765 | Midway Third 500/230 kV Transformer | Reliability: Resolve normal and emergency overloads | 11/1/2002 | Yes | Yes | No | In service | Install third transformer to accommodate new Kern County generation. |
| T646 | Panoche - Panoche Jct. Line Reconductoring | Reliability: Resolve thermal overload | 11/1/2002 | Yes | Yes | No (NOC effective) | In service | Reconductor 115 kV lines between Panoche-Oro Loma and Panoche-Mendota. 3/4/03: PG&E indicates in-service date was 11/02. |
| T848 | Madera Power-Newhall Reconductoring | Reliability: category B | 11/13/2002 | Yes | Yes | No | In service | Reconductor line. |
| T756 | Oakhurst Area Reconductoring | Reliability: Increase capacity | 1/18/2003 | Yes | Yes | No (NOC effective) | In service | Reconductor Lines. |
| T717B | Reedley 115/70 kV Special Protection System | Reliability: Increase grid reliability | 3/1/2003 | Yes | Yes | No | In service | Install Special Protection Scheme at Reedley Substation to guard against thermal overloads. 6/2/03: In-service date changed from expected of 6/61/03 to actual of 5/1/03. |
| T706A | Wilson 115 kV Bus Reconfiguration | Reliability: Increase 115 kV power and reduce Reliability Must Run contract cost | 4/1/2003 | Yes | Yes | No | In service | Reconfigure the Wilson 115 kV bus to balance thermal loading between transformers Nos. 1 and 2. |
| T855 | Wilson-Le Grand 115 kV Reconductoring | Reliability: category B | 4/1/2003 | Yes | Yes | No (NOC effective) | In service | Reconductor lines. |
| T857 | Arco 230/70 kV Special Protection System | Reliability: Resolve low voltage | 5/1/2003 | Yes | Yes | No | In service | Expand the existing Special Protection System to guard against low voltage. |

## Table C-6 - Continued
## PG&E Transmission Projects – Greater Fresno and Kern Area

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| T726 | Midway-McCall 115 kV Line | Reliability: Increase capacity of power interchange between substations | 5/1/2003 | Yes | Yes | No | In service | Rerate lines and add SCADA. |
| T710 | Los Banos Second 230/70 kV Bank | Reliability: Increase 70 kV supply | 5/1/2004 | Yes | Yes | No | Planning | Install second transformer bank. . |
| T496 | Westpark-Magunden 115 kV Reconductoring | Reliability: Increase capacity of power interchange between substations | 5/1/2004 | Yes | Pending Cost Estimate | No (NOC) | Planning | Reconductor 115 kV lines. |
| T708 | Wilson 230/115 kV Transformer Upgrade | Reliability: Increase 115 kV supply at substation | 5/1/2004 | Yes | Pending Cost Estimate | No | Planning | Transformer replacement. Replace 230/115 kV Bank No. 2 at Wilson Substation with a larger (420MVA) bank. |
| T762 | Path 15 Upgrade, new 500 kV line | Reliability: Increase transfer capability of Path 15 from 3,900 MW to 5, 400 (south-to-north) | 10/1/2004 | Yes | No | Yes | Application withdrawn 5/03 | CPUC A.01-04-012. 5/22/03: CPUC granted PG&E's motion to withdraw its Application in D03-05-082. PG&E will join Trans-Elect and Western in a project to upgrade Path 15 (listed separately in these tables). |
| T773 | Kern 230/115 kV Transformer Bank Replacement | Reliability: Increase 115 kV supply | 5/1/2005 | Yes | Pending Cost Estimate | No | Planning | Replace Transformer Bank 4 with a larger (420 MVA) bank. |
| T725 | Midway 230/115 kV Transformer Bank Replacement | Reliability: Increase 115 kV supply | 5/1/2005 | Yes | Pending Cost Estimate | No | Planning | Replace Transformer Bank 1 with a larger (420 MVA) transformer. |
| T717A | Reedley Second 115/70 kV Transformer | Reliability: Increase 70 kV supply at Reedley | 5/1/2005 | Yes | Not yet | No | Planning | Add a second 115/70 kV transformer at Reedley |
| T706A | Wilson 230 kV Loop | | 5/1/2005 | Yes | ? | ? | Detailed Scoping | Loop Warnerville-Border 230 kV line into Wilson. |

## Table C-6 - Continued
## PG&E Transmission Projects – Greater Fresno and Kern Area

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| T316 | Borden Second 230/70 kV Transformer | Reliability: Increase 70 kV supply | 5/1/2006 | Yes | Pending Cost Estimate | No | Planning | Install second transformer. |
| T778 | Henrietta 230/70 kV Capacity Increase | Reliability: Increase 70 kV supply at Henrietta Substation. | 5/1/2008 | Not yet | Pending Cost Estimate | No | Planning | Replace the 230/70 kV transformer at Henrietta Substation. Project postponed in 5/03 filing due to decrease in demand growth. 6/1/03: Status changed from "postponed" to "planning." |

# Table C-7
# PG&E Transmission Projects – Greater Bay Area

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| T339 | BART SFO Extension - Shaw Road Sub | Interconnect BART's Shaw Substation to the transmission grid | 1/1/2002 | Yes | Yes | No | In service | Customer funded. Reliability: serve new loads. |
| T764A | Metcalf-Moss Landing 230 kV Lines Rerate | Reliability: Increase capacity of power interchange between substations | 4/1/2002 | Yes | Yes | No | In service | Project added on 6/1/02. 1/27/03 - ISO changed on-line date from 4/30/02 to 4/1/02. |
| T768 | Pittsburg 230 kV Line Reactors | Normal and emergency overloads | 4/1/2002 | Yes | Yes | No | In service | For accommodating Los Medanos generation. |
| T635 | San Mateo-Martin 115 kV Line Capacity Increase | Increase import capability to San Francisco, Daly City and the Peninsula Corridor | 4/30/2002 | Yes | Yes | No (NOC effective) | In service | Increase rating by re-conductoring the underground 115 kV "dips" near the S.F. International Airport and rerating the overhead 115 kV lines. 1/31/03: CA ISO revised on-line date from 5/02 to 4/02. |
| T665 | Pittsburg-Tassajara 230 kV Line Reconductoring - Phase 2 | Normal and emergency line overloads | 5/1/2002 | Yes | Yes | No (NOC effective) | In service | Reconductor remainder (12 miles) of Pittsburg-Tassajara transmission line. 1/27/03: CA ISO lists in-service date as 4/1/02, not 5/02. |
| T558 Phase I | Tesla Third 500/230 kV Transformer Bank | Resolve normal and emergency overloads | 6/15/2002 | Yes | Yes | No | In service | Install new transformer bank- delayed from 6/1/01. In service as of June 2002. See also T558 Phase II. |
| T745 | Bay Area Reactive: Potrero 115 kV Shunt Capacitor | Reliability: Provide voltage support | 6/17/2002 | Yes | Yes | No | In service | Install 150 MVar of 115 kV shunt capacitors at the Potrero Power Plant switchyard. |
| T181 | North Receiving Station - Santa Clara | New customer substation | 7/31/2002 | Yes | Yes | No | In service | Connect Silicon Valley Power's (City of Santa Clara) Northern Receiving Substation to both existing Newark-Scott 115kV lines. 6/1/02 - Project delayed from June to July 2002. |

## Table C-7 - Continued
## PG&E Transmission Projects – Greater Bay Area

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| T081 | San Mateo South 115kV Transmission Reinforcements | Emergency 115 kV line overload | 7/31/2002 | Yes | Yes | No (NOC effective) | In service | Build 2nd Ravenswood-Bair line using existing structures. 6/1/02 - Project delayed from June to July 2002. |
| PM1133 | South of San Mateo Special Protection Scheme | Reliability | 11/1/2002 | Yes | Yes | Unknown | In service | Install protection equipment to guard against an overlapping outage of two 230 kV lines, either the Ravenswood-San Mateo Nos. 1&2 or the Contra Costa-San Mateo Nos. 1&2. The SPS, if triggered, will trip up to 500 MW of customers in the mid-San Francisco Peninsula. |
| T088 | BART SFO Extension - Santa Paula Sub | New customer substation | 12/8/2002 | Yes | Yes | No | In service | Customer funded. . |
| T787 | Ravenswood-San Mateo 230 kV Line Reconductoring | Reliability: G-4, L-1 | 12/31/2002 | Yes | Yes | No (NOC effective) | In service | Install bundled conductors on #2 circuit. |
| T771 | Monta Vista 230/115 kV Transformer Replacement | Resolve emergency overload. Reliability: category B | 3/1/2003 | Yes | Yes | No | In service | Replace Transformer No. 3 with a 420 MVA bank. 4/1/03: on-line as of 3//03, ahead of 5/03 schedule. |
| T784 | Pittsburg-Martinez 115 kV Line Reconductoring | Reliability: category B | 3/1/2003 | Yes | Yes | No (NOC effective) | In service | Reconductor two 115 kV lines. 4/1/03: on-line 3/03 ahead of 5/03 schedule |
| T655A | Jefferson Bank Capacity - Protection Work | Emergency overload, low voltages | 5/1/2003 | Yes | Yes | No | In service | Modify 60 kV line projection in 2002, and install second Jefferson transformer in 2005 (see T655b). 7/1/02. |
| T340 | Metcalf 230/115 kV Fourth Transformer Bank | Reliability: Resolve emergency transformers' overload | 5/1/2003 | Yes | Yes | No | In service | Install a fourth transformer. 9/1/02 - PG&E approval obtained. |

## Table C-7 - Continued
## PG&E Transmission Projects – Greater Bay Area

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| T590 | Metcalf 500/230 kV Third Transformer | Reliability: Resolve emergency transformers' overload | 5/1/2003 | Yes | Yes | No | In service | Install third transformer. |
| T846 | Newark/Dumbarton 115 kV Line | Reliability: category B | 5/1/2003 | Yes | Yes | No | In service | Install protection equipment to guard against an equipment overloading problem. |
| T769 | San Jose B-FMC Junction 115 kV Line | Reliability: category B | 5/1/2003 | Yes | Yes | No | In service | Reconductor one span of the 115 kV line outside of San Jose B. 4/1/03: on-line date now 5/03. |
| T197 | Ignacio 230/115 kV Capacity Increase | Resolve emergency overload | 6/1/2003 | Yes | Yes | No | In service | Install a new 230/115 kV transformer. 6/1/03: In-service date changed from 5/1/03 to 6/1/03. |
| T011 | Northeast San Jose Reinforcement Project | Resolve normal and emerg. line and transformer overloads | 6/1/2003 | Yes | Yes | Yes; filed and completed in March 2002 | In service | CPUC A.98-07-007. Construct new 230/115 kV Los Esteros Substation, two new 230 kV Los Esteros-Newark circuits, new 115 kV Los Esteros-Montague circuit, and reroute 115 kV line from Newark to Milpitas. The 230 kV circuits and 230/115 kV substation work is expected to be completed by late May/early June. The Los Esteros-Montague circuit is expected to be completed by early July 2003. 6/1/03: In-service date moved from 7/1/03 to 6/1/03. |
| T792 | Pittsburg 230/115 kV Bank Capacity Increase | Congestion and RMR issues | 6/1/2003 | Yes | Yes | No | In service | Replace a smaller-size transformer (bank 12) with a 420 MVA transformer. 6/1/03: In-service date changed from 5/1/03 to 6/1/03. |
| T558 Phase II | Tesla 500/230 kV Third Transformer Bank | Resolve normal and emergency overloads | 6/1/2003 | Yes | Yes | No | In service | Install third transformer. Also see T558 phase I. |

## Table C-7 - Continued
## PG&E Transmission Projects – Greater Bay Area

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| T157 | Tri-Valley Long Term Transmission Project | Resolve insufficient 60 kV normal capacity | 7/1/2003 | Yes | Yes | Yes; filed and completed on 10/10/01 | Construction | Construct two 230/21 kV distribution substations and sections of 230 kV overhead and underground transmission lines. 6/1/03: In-service date changed from 5/1/03 to 7/1/03. |
| T767 | Metcalf 500 kV Special Protection Scheme | Reliability: Category C | 4/1/2004 | Yes | Pending Cost Estimate | No | Planning | Install a special protection scheme to drop load after an overlapping outage of two 500 kV lines. 5/1/03: On-line date moved from 12/03 to 4/04. |
| T747 | City of Santa Clara (Silicon Valley Power) - PG&E 230kV Interconnection | Tariff Compliance | 5/1/2004 | No | Pending Cost Estimate | No | Planning | Interconnect Silicon Valley Power's proposed 230 kV line from its Northern Receiving Station to Los Esteros Substation. |
| T902 | East Shore 230 kV Circuit Breaker | Reliability: Increase reliability of supply | 5/1/2004 | Yes | Pending Cost Estimate | No | Planning | Install a 230 kV circuit breaker at East Shore. |
| T521 | FMC 115 kV Loop | Increase service reliability | 5/1/2004 | Yes | Yes | No (PTC effective) | Planning | Second 115 kV line to FMC Distribution Substation. Check on permitting requirement on-going. 5/1/02 - On-line date changed from May 2003 to May 2004. |
| T744 | Hunters Point-Potrero 115 kV Circuit | Reliability: Increase reliability of supply in San Francisco | 5/1/2004 | Yes | Pending Cost Estimate | PTC/ NOC TBD | Planning | Install a 115 kV underground cable between Potrero and Hunters Point Power Plant Switchyards. |
| T694 | Metcalf - El Patio 115 kV Reconductoring | Reliability: Increase 115 kV supply | 5/1/2004 | Yes | Pending Cost Estimate | No (NOC) | Planning | Reconductor 115 kV lines between Metcalf and El Patio Substations. |
| T847 | Newark-Fremont 115 kV Line | Reliability: Increase capacity of power interchange between substations | 5/1/2004 | Yes | Pending Cost Estimate | NOC | Planning | Reconductor the Newark-Fremont 115kV transmission line. |
| T656 | Ravenswood 230/115kV Capacity Increase | Reliability: Increase 115kV at Substation | 5/1/2004 | Yes | Yes | No | Planning | Install 2nd 230/115kV transformer at Ravenswood Substation. 5/1/03: Project scope was increased to include the expansion of the 230 kV bus at Ravenswood. |

## Table C-7 - Continued
## PG&E Transmission Projects – Greater Bay Area

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| T790 | Bay Area Reactive - Potrero SVC | Reliability: voltage support | 9/1/2004 | Yes | Not yet | No | Planning | Install a +240/-100 Static Var Compensator at either Potrero Switchyard or Hunters Point Switchyard. |
| T746 | San Mateo-Martin 60kV Conversion to 115kV and Line Reconductoring | Reliability: Increase power supply to SF and northern San Mateo County | 12/1/2004 | Yes | Yes | Application withdrawn | Planning | The CPUC held evidentiary hearings on Feb. 25-27, 2002 to determine the plausible range of economic benefits from the Path 15 expansion project, on a stand-alone basis. Opening briefs were filed by ORA and PG&E on 6/14/02 regarding the potential application of General Order 131-D to the proposed MOU Path 15 upgrade project. Hearings were held on July 23, 2002, and additional testimony has been filed on the cost allocation of both the PG&E and the MOU projects (see ID# MOU). 1/31/03: CA ISO revised on-line date from TBD to 10/04. 3/7/03: CPUC issued proposed decision of ALJ Gottstein and alternate proposed decision of Cmsr. Lynch. Gottstein's proposed decision denies the project; Lynch's supports it. 5/22/03: CPUC gave permission to PG&E to withdraw its application. |
| T772 | Contra Costa-Las Positas 230 kV Line | Reliability: category B; increase capacity of power interchange between substations. | 5/1/2005 | Yes | Pending Cost Estimate | No (NOC) | Planning | 4/23/02 - Mirant has recently announced a two-year delay in its Contra Costa 8 power plant project. On line date changed from 5/1/03 to 5/1/05. |
| T655B | Jefferson Bank Capacity - Transformer Work | Emergency overload, low voltages | 5/1/2005 | Yes | Yes | No | Planning | Project added on 9/1/02. Install a second transformer bank. See also T655a (modify 60 kV line protection). |
| T854 | Metcalf-Evergreen 115 kV Reconductoring | Reliability: Increase 115 kV supply | 5/1/2005 | Yes | Pending Cost Estimate | No (NOC) | Planning | Reconductor 115 kV lines between Metcalf and Evergreen Substations. |

## Table C-7 - Continued
## PG&E Transmission Projects – Greater Bay Area

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| T082 | Jefferson-Martin New 230 kV Line | Transmission deficiency under contingency condition | 9/1/2005 | Yes | Yes | Pending | Planning | ISO Board approved the beginning of permitting process. See S.F. Peninsula Long-Term Planning Study. 5/1/02 - Environmental evaluation on-going. 9/1/02 - PG&E still preparing Proponent's Environmental Assessment. PG&E filed CPCN application 9/30/02. 1/10/03 - Pre-Hearing Conf. at CPUC. |
| T692 | Metcalf-Piercy, Swift-Metcalf, and Newark-Dixon Landing 115 kV Reconductoring | Reliability: Increase capacity of power interchange between substations | 5/1/2006 | Yes | Pending Cost Estimate | No | Planning | Reconductor the lines. 3/5/03: on-line date moved from 5/1/05 to 5/1/06. 6/1/03: Name change, adding "Swift-Metcalf." |
| T776 | Monta Vista 60 kV Upgrade | Reliability: Increase 60 kV supply | 5/1/2006 | Yes | Pending Cost Estimate | No | Planning | Replace the existing Monta Vista 115/60 kV transformer with a larger unit. |
| T141 | Lone Tree Substation (Transmission) | Greater Bay Area/East Bay (Diablo) | 5/1/2007 | Yes | Pending Cost Estimate | CPCN/ PTC TBD | Planning | 7/16/03: CA ISO identified this as a major project in the Controlled Grid Study Plan. Connect a new 230/21 kV distribution substation with two 45 MVA transformers to the transmission grid. |
| T142 | Robles 230 kV Substation (Transmission) | Reliability: Load growth | 5/1/2009 | Yes | Pending Cost Estimate | CPCN/ PTC TBD | Planning (Postponed) | Project deferred to 2004 due to reduced demand growth. 5/03: Project listed as "postponed due to decrease in demand growth." |
| T073 | Bay Area 500 kV Transmission Long Term Plan | Increased electric demand in the Bay Area | TBD | Not yet | Pending Cost Estimate | TBD | Planning | In the conceptual planning stage: final alternative is not selected. Phase 2 economic studies underway with input from the CA ISO, San Francisco, and Palo Alto. |
| NA | Metcalf-Evergreen 115 kV Lines Special Protection System | Reliability | TBD | Not yet | Not yet | No | Planning | Install protection equipment to guard against thermal overloads. Further analysis concluded that this SPS is very complicated and extremely difficult to implement. PG&E will work with the CA ISO on an alternate. |
| NA | Newark-Scott 115 kV Lines Special Protection System | Reliability | TBD | Not yet | Not yet | No | Planning | Install protection equipment to guard against thermal overloads. PG&E is evaluating the feasibility and desirability of this SPS. |

## Table C-7 - Continued
## PG&E Transmission Projects – Greater Bay Area

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| T010 | Nortech (Kifer-Trimble) 115 kV Loop | Reliability: Increase reliability of supply to Nortech Substation | TBD | Yes | Yes | No (PTC Effective) | Construction | CPU A.98-06-001. A.K.A. North San Jose Capacity Project. New 115 kV substation and new 115 kV lines. Has encountered local permitting delays. 4/1/03: on-line date changed from 5/03 to TBD. Loops Kifer-Trimble 115kV transmission line through existing Nortech Substation. This project has recently encountered implementation issues. |
| NA | Ravenswood-Palo Alto Nos. 1 & 2 Special Protection System | Reliability | TBD | Not yet | Not yet | No | Planning | Install protection equipment to guard against thermal overloads. PG&E is evaluating the feasibility and desirability of this SPS. |

# Table C-8
# SDG&E Transmission Projects

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| BP99117 | Escondido Substation 230/69 kV Transformer | Emergency overload, increase SDG&E import capability by 200 MW, reduce future RMR cost | 6/1/2001 | Yes | Yes | No | In service | Install a new 224MVA 230/69 kV transformer at Escondido Substation. |
| BP98187 | Rancho Santa Fe - Bernardo 69 kV Transmission Line | Normal overload | 6/1/2001 | Yes | Yes | Yes | In service | Reconductor 6.8 miles of the 69 kV line from the Rancho Santa Fe tap to the Bernardo tap |
| BP01140 | Imperial Valley - La Rosita 230 kV Transmission Line Reconductor | Reliability | 11/1/2001 | Yes | Yes | No | In service | Reconductor 5.4 miles of the 230 kV transmission line from the Imperial Valley Substation to the US-Mexico border with two conductors per phase (6 conductors total) |
| BP98195 | Sycamore Canyon Substation: New 230/69 kV Transformer | Reliability: Handle load growth | 6/1/2002 | Yes | Yes | No | In service | Install new transformer bank. |
| BP98191 | Chollas-Spring Valley 69 kV Line: Reconductor TL 622 | Reliability: Resolve Chollas-Spring Valley 2.5% overload | 12/1/2002 | Yes | Yes | No | In service | Supports load growth in the Lemon Grove and Spring Valley Areas. |
| BP99125A | Install reactive power support (Talega Substation capacitors and STATCOM) | Provide reactive power support and support increase to import capability | 12/1/2002 | Yes | Yes | No | In service | Install 207 MVAR, 230 kV capacitor bank and 100 MVAR, 230 kV STATCOM at Talega Substation. |

## Table C-8 - Continued
## SDG&E Transmission Projects

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| BP99120 | Expand 230 kV Capability at San Luis Rey Substation | Reliability: Support increase in import capability and load growth | 2/1/2003 | Yes | Yes | No | In service | Loop three 230 kV lines into San Luis Rey Substation and upgrade one 138 kV line to 230 kV. |
| BP01148A | Imperial Valley 500/230 kV Transformer Upgrades Phase A - replace existing bank | Economic: Mitigate congestion | 6/1/2003 | Yes | Yes | No | Design/ Construction | Phase A involves replacing the existing bank. Mitigates transmission system congestion due to new generation injection from the La Rosita Expansion Projects, SER's Thermoelectrica de Mexicali Project, and high exports from CFE. R |
| BP01143 | Border Tap - Otay Lake: Reconductor TL649F Otay Lake Tap - Border Tap 69 kV Line | Economic: Remove Congestion | 12/1/2003 | Yes | Yes | No | Construction | Reconductor 5.7 miles of 69 kV line from Border Tap to Otay Lake Tap. 4/23/02 - SDG&E believes the CA ISO approval is premature since no party has submitted a system upgrade request for this economically-driven project pursuant to ISO tariff. |
| BP01148B | Imperial Valley 500/230 kV Transformer Upgrades Phase B | Economic: Mitigate congestion | 12/1/2003 | Yes | Yes | No | Design/ Construction | Phase B involves installing a new second 500/230 kV transformer bank. Mitigates transmission system congestion due to new generation injection from the La Rosita Expansion Projects, SER's Thermoelectrica de Mexicali Project, and high exports from CFE. |
| BP01146 | Reconductor Portion of TL636 and TL638 at Santee Substation and Loop-in TL13821: Los Coches-Chicarita to Santee | Reliability: Load growth | 12/1/2003 | Yes | Yes | No | Construction | This project is associated with the Santee 138kV Conversion Project proposed by Distribution Planning. Reconductor 3.8 miles of two 69 kV lines near Santee Substation. |

## Table C-8 - Continued
## SDG&E Transmission Projects

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| BP02164 | Reconductor TL603 National City - Sweetwater-Naval Station Metering | Reliability | 12/1/2003 | Yes | Yes | No | Design/ Construction | This project is to increase the transmission capacity between Sweetwater Substation and the downtown area, which will increase operating flexibility and improve reliability to the downtown area load. Increase capacity of TL 603 to 1425 Amps. |
| BP01147 | San Diego-Coronado 69 kV Line: Relocate Portion of the Line Under the San Diego Bay | Mandated: Reliability | 2/1/2004 | Yes | Yes | No | Design | Project conflicts with the proposed channel dredging by the US Army Corps of Engineers. |
| BP02162 | TL 13813 and TL 13814 (South Bay-Main Street 138 kV lines) Capacity Increase | Reliability: Handle load growth | 6/1/2004 | Yes | Yes | No | Design | Increase capacity of TL 13813 and TL 13814, South Bay-Main street line reconductoring. |
| BP95144 | Torrey Pines-UCM Substation 69 kV Line | Reliability: Handle load growth | 6/1/2004 | Yes | Yes | No | Design | Construct approximately 2.5 miles of new underground 69 kV line between UCM and Torrey Pines Substations. |
| BP00150 | Reinforce TL23030 Transmission Between Escondido and Orange County | Reliability | 12/1/2004 | Yes | Yes | Part of Valley-Rainbow CPCN | On hold | Reinforce TL23030 Transmission Between Escondido and Orange County. On-hold due to pending appeal of the Valley-Rainbow decision. |
| BP98192 | Escondido-Ash: Reconductor TL 696 | Reliability: Escondido-Ash 1% overload & increases transmission capacity to Ash | 6/1/2005 | Yes | Yes | No | Design | Reconductor 3.5 miles of 69 kV line between Escondido and Ash Substations to serve additional load from new casino at Indian Reservation. Planned operating date may be advanced due to outage requirement. Three lines in this area are being upgraded by 6/03. 5/03: |

## Table C-8 - Continued
## SDG&E Transmission Projects

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| BP00146 | Escondido-Lilac: Reconductor TL688 | Reliability: Mitigate thermal overload | 6/1/2005 | Yes | Yes | No | Design | Reconductor 9 miles of the Escondido-Lilac 69 kV transmission line to serve load growth in Lilac, Pala and Rincon areas. |
| BP01144 | Miguel-Mission Second 230 kV line | Economic: remove congestion; accommodate new generation south of Miguel Substation | 6/1/2005 (delay expected) | Yes | Yes | Yes (Filed) | Permitting/ Design | CPUC Proceeding I.00-11-001 (AB970). A. Construct a new 230 kV double-circuit line from Miguel Substation to Fanita Junction, using the existing 138 kV steel tower line. B. Extend the new 230 kV line from Fanita Junction to Mission Substation. 6/4/02 - Project slipped from 12/01/04 to 6/1/05. 6/25/02 - ISO approval obtained. 7/12/02 - Application for CPCN filed. 8/12/02 - SDG&E received deficiency letter for their CPCN application. 9/6/02 - Pre-hearing conference was held on CPCN application. 2/3/03: SDG&E indicated that the CPUC staff determined the CPCN application is adequate on 1/27/03. 2/28/03: CPUC approved project; CPCN still needed. |
| BP00152A | Static and Dynamic Reactive Power Support | Reliability | 6/1/2005 | Subject to re-evaluation | Yes | Part of Valley-Rainbow CPCN | On hold | A. At Sycamore Substation, install 138 MVAR, 230 kV capacitor bank; B. At Miguel Substation, install 69 MVAR, 230 kV capacitor bank; C. At Mission Substation, install 200 MVAR STATCOM. |
| BP02160 | Transmission Capacitors | Reliability: Support load growth | 6/1/2005 | No | Yes | No | Planning | Install transmission capacitors at Telegraph Canyon, Sycamore Canyon, and San Luis Rey. 3/03: removed Sycamore Canyon STATCOM from project scope, pending further study. 6/03: In-service date moved from 6/2004 to 6/2005. |
| BP02161 | Upgrade Scripps Sycamore Canyon and Miramar to Scripps | Reliability: Handle load growth | 6/1/2005 | Yes | Yes | No | Planning | Build new 69 kV line between Sycamore Canyon and Miramar Substations and Reconductor the Miramar-Scripps 69 kV line. |

## Table C-8 - Continued
## SDG&E Transmission Projects

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| BP00154 | Shadowridge-Calavera Tap 69 kV Line: Reconductor TL 13802B | Reliability: Load growth | 6/1/2006 | Yes | Yes | No | Design | Reconductor 3.5 miles of the 138 kV Shadow Ridge-Calavera Tap transmission line. |
| BP01142 | Rincon-Lilac 69 kV: Reconductor TL683 | Reliability: Load growth | 6/1/2007 | Yes | Yes | No | Design | Reconductor 12.2 miles of the 69 kV line Rincon-Lilac transmission line. New project due to casino load. |
| BP01141 | Talega-Pico Transmission Line: Reconductor 138 kV TL | Reliability: Load growth | 6/1/2007 | Yes | Yes | No | Planning | Reconductor 0.68 miles of 138 kV line between Talega and Pico Substations. |
| BP03170 | Silvergate-New 138/69 kV Substation | Reliability | 12/1/2007 | No | Yes | PTC to be filed | Planning | Move TL from Main Street Substation to Silvergate Substation; construct a new 138 kV/60 kV substation. |
| BP00153 | Capistrano-Laguna Niguel Transmission Line: Reconductor 138 kV TL13837 | Reliability: Handle load growth | 6/1/2009 | Yes | Yes | No | Planning | Reconductor 2.9 miles of 138 kV line from Capistrano Substation to Laguna Niguel and San Mateo Substations to meet projected load growth. |
| N/A | Imperial Valley-La Rosita Second 230 kV Line | Support increase to import capability and load growth | TBD | No | No | Yes (see comment) | Planning | CPUC proceeding Install a second 230 kV circuit on existing double-circuit towers between Imperial Valley and La Rosita Substations. Project added on 6/1/02. Project would add up to 800 MW of capacity to Path 45. SDG&E, CFE, IID, and several merchant generators are participating in a joint study process for further expansion of Path 45 in 2003-2005. Addition of a second circuit on the existing towers was authorized as part of the original CPCN decision D83-10-004, and was reaffirmed by CPUC decision D01-12-016. |

## Table C-8 - Continued
## SDG&E Transmission Projects

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| BP99123 | Valley-Rainbow Interconnection Project, 500 kV | Reliability: Support increase to import capability and load growth | Unknown (previously was 6/1/05) | Yes | Yes | Yes; filed 3/23/01. Docket closed & CPCN denied 12/19/02. | Denied 12/19/02; Appeal denied | CPUC A.01-03-036. Project denied 12/19/02. Appeal denied by CPUC 5/03. |

# Table C-9
# SCE Transmission Projects

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| NA | Antelope-Bailey 66 kV System (Phase I) | Reliability: minimize voltage problems and improve system performance in the Tehachapi area. | 1/1/2001 | Yes | Yes | No | In service | Phase I: Upgrade existing 66 kV Tehachapi system (re-arrange line, add small segments of 66 kV lines and add a new CalCement line position. See below for additional project, #04825. |
| 04376 | Alamitos - Barre #2 230 kV Transmission Line | Reliability | 6/1/2001 | Yes | Yes | No | In service | Replace 2000A wave traps with 3000A wave traps on the Alamitos-Barre #2 line terminals at Alamitos and Barre Substations |
| 04376 | Midway-Vincent 33 Wave Trap (Path 26 500 kV Transmission Lines) | Reliability | 6/1/2001 | Yes | Yes | No | In service | Part of Path 26: Replace wave traps at Vincent and Midway. Due to increased load, the wave trap has to be replaced with a higher rating to avoid overload. 12/04/02 - Project added. 2/5/03: CAISO confirms in-service date as 6/01. |
| N/A | North of Lugo RAS Modifications - Alta RAS | System Stability | 3/1/2002 | Yes | Yes | No | In service | In service as of 3/1/02. |
| 04701 | Barre-Lewis, Barre Villa Park 230 kV Reconductoring and misc terminal equipment | Reliability plus elimination of higher-cost RMR contract | 6/1/2002 | Yes | Yes | No | In service | Reconductor Barre-Lewis/Villa Park 230 kV lines. |
| 04917 | Hinson-Lighthipe 230 kV Transmission Line | Reliability | 6/1/2002 | Yes | Yes | No | In service | Project added on 5/1/02. Replace existing wave traps with 3000A wave traps on the Hinson-Lighthipe 230 kV line terminal at Lighthipe Substation. |
| 04701 | Mesa/Pardee/ Sylmar 230 kV Transmission Lines | Reliability plus elimination of higher-cost RMR contract | 6/1/2002 | Yes | Yes | No | In service | Project added on 5/1/02. Replace wave traps on the Mesa/Pardee/Sylmar 230 kV line terminals at Eagle Rock Substation. |

## Table C-9 - Continued
## SCE Transmission Projects

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| 04701 | Serrano-Villa Park #1 and #2 230 kV Transmission Lines | Reliability plus elimination of higher-cost RMR contract | 6/1/2002 | Yes | Yes | No | In service | Project added on 5/1/02. Re-rating of the line risers at Serrano Substation on the Serrano-Villa Park #1 and #2 230 kV lines. |
| N/A | North of Lugo RAS Modifications - Mc Gen RAS | Reliability: Eliminate risk of N-1 overload | 12/31/2002 | Yes | Yes | No | In service | |
| 04701 | 2001 RMR Elimination Project Capacitor Banks | Reliability plus elimination of higher-cost RMR contract | 5/1/2003 | Yes | Yes | No | In service | Install 79 MVar, 230 kV capacitor banks at Mesa, La Freda, and Laguna Bell Substations. 6/1/03: In-service dated changed from 6/1/03 to 5/1/03. |
| 03773 | Valley Substation Phase 1: Third 500/115 kV Transformer | Reliability: relieve substation overload | 6/1/2003 | Yes | Yes | No | Construction | Install 500/115 kV Transformer #3 (560 MVA) at Valley Substation; Phase 1. Expected to be in service during 2003 (no month given in the monthly CPUC filing), with a 4th bank expected in service (Phase 2) in 2004. See separate entry for Phase 2. 3/03: filing lists Phase 1 expected on-line in 2003 (no month specified); Phase 2 for 6/2004. |
| 04936 | Vincent Fourth 500/230 kV Transformer bank | Reliability | 8/1/2003 | Yes | Yes | No | Construction | Install fourth transformer bank to avoid overload during outage of any of the three transformers at Vincent. 6/1/03: In-service date moved from 7/03 to 8/03. |
| T903 (PG&E) and 04833 (SCE) | Path 26 Upgrade Project, Phase 1 (Short-term solution) - - RAS to Drop SCE Load | Economic: Increase transfer capability and relieve transmission congestion | 11/03 (Staff Estimate) | Yes | Yes (PG&E) | No | Planning | Phase 1. Project added on 5/1/02. Modify the existing remedial action scheme to trip generation in the Midway area for a 500 kV double line outage. This would increase the north-to-south transfer capability of Path 26 from the existing 3000 MW to 3400 MW (short-term solution). See also the Path 26 Upgrade Project Long-term solution. 1/27/03: SCE lists project as under construction, expected on-line 6/1/03; PG&E expects project on-line 11/03. |

## Table C-9 - Continued
## SCE Transmission Projects

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| 04825 | Antelope-Bailey 66 kV System (Phase II) | Reliability: Minimize voltage problems & improve system performance in Tehachapi area. | 5/1/2004 | Yes | Yes | No | Construction | On-going studies aimed at resolving constraints placed upon wind developers. See also the Tehachapi Transmission Line project below (project ID#04928). Project added on 5/1/02. 3/17/03: SCE letter to CPUC indicates intention to proceed with Tehachapi project. 6/1/03: In-service date changed from 12/05 to 5/04. |
| 04521 | Mira Loma 500/230 kV Fourth Transformer Bank | Reliability: Resolve emergency overloads | 6/1/2004 | No | Yes | No | Planning | Install 500/230 kV Transformer #3 (1120 MVA) at Mira Loma Station. |
| 04889 | Upgrade the three 500 kV Transmission Lines South of Lugo: Lugo-Mira Loma #2 & #3; and Lugo-Serrano Substation. | Reliability: Avoid overload during outage of two of the three lines | 6/1/2004 | Yes | Yes | No | Construction | For each of the three lines, this upgrade will: (a) increase separation of line conductors from ground at several locations; (b) replace all 500 kV wave traps (18 total); and (c) upgrade the 500 kV GIS line riser at Serrano Substation on the Lugo-Serrano 500 kV line. |
| 03773 | Valley Substation, Phase 2: 560 MVA, Fourth 500/115 kV Transformer | Reliability: Relieve substation overload | 6/1/2004 | Yes | Yes | No | Construction | Install 500/115 kV Transformer #4 (560 MVA) at Valley Substation. See separate entry for Phase 1. |
| 04902 | Zack Tap 55 kV Reliability Project (AKA Silver Peak Circuit Breaker; AKA Control - Zack Switch) | Reliability: Reduction of circuit interruption (PBR Benefit) | 6/1/2004 | Yes | Yes | No | Construction | Install a switch at the tap for the Silver Peak leg on the Control-Zack-White Mountain-Deep Springs 55 kV transmission lines. |

## Table C-9 - Continued
## SCE Transmission Projects

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| 03603 | Viejo 230/66 kV Substation | Reliability: Install various facilities to relieve A-Bank and transmission line loading and also to improve reliability by creating load-rolling options | 5/1/2005 | Yes | Yes | No (PTC expected) | Permitting | Connect to 230 kV system by looping San Onofre-Chino 230 kV line into it. 3/03: on-line date moved from 2004 to 5/1/05. |
| None | Devers-Palo Verde 2 | Reliability: increase import capability from desert southwest into California and facilitate deliver of generation in Palo Verde area | 6/2005 | No | No | Yes | Planning | Preparing to file CPCN application in the 4th qtr of 2003 or early 2004 after preparation of the Proponent's Environmental Assessment (PEA). Will significantly increase the import capability from the desert southwest into CA and facilitate the delivery to California of additional generation supply from facilities in the Palo Verde area. |
| 04928 | Tehachapi Transmission Line | Reliability: minimize voltage problems, increase capacity, and connect wind generation | 2006 or later | No | Yes | No (CPCN expected in first half of 2004) | Planning | CPUC I.00-11-001 (AB970). A new 230 kV line is a proposed alternative solution to the Antelope/Bailey 66 kV system upgrades (project ID#04825). Includes both 230 and 69 kV facilities. 1/15/03: SCE completed and issued the Phase 2 Tehachapi Transmission Conceptual Study. Project would include construction of 230 kV line between SCE's existing Pardee substation and a new substation in the Tehachapi area, plus construction of associated 66 kV collector lines from various windparks. Project would support development of potential new renewable resources in this area. |

## Table C-9 - Continued
## SCE Transmission Projects

| PTO ID # (ISO ID #) | Project Name | Purpose | Current Projected or Actual On-line Date | ISO Approved | PTO Approved for Funding | CPCN Required | Project Status | Description / Comments |
|---|---|---|---|---|---|---|---|---|
| None | Etiwanda 500/230 kV Substation | Reliability: Load growth | 2008 | No | No | No (PTC application expected 4th qtr of 2003) | Planning | Required to serve growing customer load in western San Bernardino County area. |
| None | Path 26 Upgrade Project (Long-term solution): Phase 2 | Economic: Increase transfer capability and relieve transmission congestion | TBD | No | No | No | Planning | Phase 2; see Project 04833 for Phase 1. Upgrade the existing Path 26 transmission system by making facility upgrades at the Midway and Vincent Substations, and reconductoring PG&E's 500 kV line segment of the Midway-Vincent #3 500 kV line, in order to increase the bi-directional path rating from 3400 MW (following a short-term upgrade) to 4000 MW. Project added on 5/1/02. 6/1/02 - In service date changed from 2007 to TBD. |